REMARKS

Claims 60, 66, 126, and 132-152 are pending in the application.

In reply to the Response filed September 26, 2002 and after a new search, the Examiner has withdrawn the previously-indicated allowability of claims 133-148.

Claim 148 is objected to, because the Examiner believes that the term "line" should be replaced with "surface." Applicants amend claim 148 accordingly.

Claims 60, 126, 149, and 151 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly-cited Kohda (US 5,591,982) in view of Saotome (USP 5,038,037), Nakamura et al. (USP 5,427,858, hereinafter "Nakamura") and newly-cited Takahashi et al. (US 4,535,238, hereafter "Takahashi").

Claims 66, 132, 150, and 152 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kohda in view of Nakamura and Takahashi.

Claims 133-144 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kohda in view of Saotome, Nakamura and Takahashi, and further in view of newly-cited Fukai et al. (US 4,914,294, hereafter "Fukai") and newly-cited Watanabe et al. (US 4,831,626, hereafter "Watanabe").

Claims 145-148 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kohda in view of Saotome, Nakamura and Takahashi, and further in view of newly-cited Schrof et al. (US 5,949,532, hereafter "Schrof").

Applicants traverse the rejections with the following comments.

Rejection of claims 60, 126, 149, and 151 over Kohda in view of Saotome, Nakamura, and Takahashi.

For this rejection, Applicants submit that there is no suggestion or motivation to combine the references. In particular, it would not have been obvious to one of ordinary skill in the art to combine the teachings of Saotome with Kohda, or the teachings of Nakamura with Kohda.

Kohda relates to the coloring and weight ratio of phosphor particles of different layers in a radiation image storage panel. In this regard, Kohda teaches that certain ratios of coloring materials at certain depths will lead to absorption of stimulating rays at a surface of the stimulable sheet. This leads to reduced spread of stimulating rays within the phosphor layer. Col. 3, lines 50-55. As a result, the sharpness and graininess of a radiation image can be improved. Col. 3, lines 45-48. In addition, it is noted that Kohda relates to two-sided reading based on a stimulating beam imparted to one side of the sheet, and emitted light signals are processed together. See Fig. 1.

Saotome is cited for its alleged disclosure of line light sources 621 and line sensors 623 for reading data one line at a time. The Examiner's asserts that "[i]t would have been obvious to ... employ a line light source and line sensors in a radiation image read-out apparatus, since reading an entire line at a time is much faster than scanning across a line as taught by Kohda ... in order to expedite the time it takes to read the image." Applicants respectfully disagree and note that the Examiner's position does not appear to be well supported.

To establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the Applicants. Here, none of the applied references

provide such a motivation, suggestion or teaching. Kohda and Saotome merely disclose certain features, without indicating any desirability in making the specific combination made by the Applicants. Rather, it is only the Applicants' specification which provides the teaching of the specific combination of elements claimed in claim 60 and 126.

The Examiner asserts that the image read-out of Saotome is faster than that of Kohda, but has provided no support for this assertion. Even if line sensors are used in Saotome to read out a line at a time, there is no manner by which to establish whether or not such a read out process is faster than the image read-out of Kohda. For example, Saotome discloses that the signals read out by the line sensors 623 "are stored temporarily and are sequentially read out by a scanning circuit 626." However, there is no disclosure of how long these signals are stored, how fast they are output, or how fast Kohda outputs image data. Thus, there appears to be no support for the Examiner's alleged motivation to combine Kohda and Saotome for purposes of an expedited reading time.

Applicants further note that Saotome teaches the use of two independent light and reading sources disposed on opposite sides of a recording material that includes a first stimulable phosphor 402B and a second stimulable phosphor 402B' with a conversion layer 405 disposed between the phosphor materials. A principle of operation of the Saotome reference is to obtain a different radiation image from the first and second sheets as independent signals and process them as such. Accordingly, as previously discussed, the sheet in Saotome may be permeable to x-ray radiation but with the presence of the radiation conversion layer, the characteristics of the stimulated light differ from the first and second sheets. In contrast, Kohda does not include the independent processing devices for front and back surfaces of the sheet. Rather a common

stimulating source 13 causes emissions through the sheet which are added or reduced in a processor 18. The approaches of Kohda and Saotome are sufficiently different that one skilled in the art would not combine their teachings.

As a related matter, Applicants submit that the use of a line source in Kohda would cause light to diffuse to a larger extent through the phosphor sheet, leading to deteriorated sharpness and graininess of the resulting image. A principle object of Kohda is to eliminate causes of light diffusion, and Applicants submit that use of a line source in Kohda would directly contradict this purpose. Moreover, because signals from the front and back surfaces in Kohda are processed in common and not independently, the scattering of light of neighboring pixel areas through use of a line source would further deteriorate the image quality at any particular pixel. Therefore, one skilled in the art would not modify Kohda to include a line source as the Examiner suggests.

Nakamura is cited for its disclosure of organic EL light sources. The Examiner asserts that it would have been obvious to "employ an organic EL device as a line light source in a radiation image read-out apparatus, since the stimulated emission of the phosphor depends on the wavelength of the stimulating light, a person would be motivated to employ an organic EL light source whose wavelength can be customized to induce optimal emission yield in the phosphor in order to enhance the signal to noise ratio in the image." Applicants have the following comments on the Examiner's assertion.

That the stimulated emission of a phosphor depends on the wavelength of the stimulating light is well known in the art. Such a concept is not particular to Nakamura or to organic EL light sources. Furthermore, selecting a particular wavelength to optimize emission yield and thereby enhance signal to noise ratio is well known in the art. Moreover, light sources other than

organic EL light sources can have their wavelength customized. See, for example, col. 5, lines 56-59 of Kohda. The aforementioned attributes of phosphors and light sources are not unique to the disclosure of Nakamura or organic EL devices. The alleged motivation to combine the references is essentially a statement of generalized concepts related to phosphors and light sources. In other words, the wavelength dependence of light emissions would not teach one skilled in the art to use an EL device, a line source or other aspects of the claimed invention as opposed to other available light sources. Furthermore, the organic EL device of Nakamura is used for a television or other display, rather than for radiation readout. Thus, the Examiner has not provided a convincing line of argument as to why one of ordinary skill in the art would have combined the specific teachings of Nakamura with the specific teachings of Kohda. Instead, the rejection appears to be supported only by impermissible hindsight reasoning, in which the Applicants' disclosure is used against them.

Moreover, to the extent that Nakamura discloses an EL source, it is used for purposes of a display device. Col. 1, lines 17-20. In the context of television displays for example, the directivity of light is not important. Applicants submit that directivity in such display applications is not desirable as it would limit the field of view too narrowly. As previously discussed, Applicants were the first to recognize that sufficient directivity could be derived from an EL source to make it appropriate as a stimulating source.

Therefore, claims 60, 126, 149, and 151 are allowable over the prior art.

Rejection of claims 66, 132, 150, and 152 over Kohda in view of Nakamura and Takahashi.

Although Nakamura is cited for its disclosure of using an organic EL device as a surface light source, instead of the citation of Saotome for its disclosure of line light sources, analogous arguments apply to the present rejection that were presented above. In particular, Kohda and Nakamura fail to disclose anything that would provide a measure of whether Kohda's method is faster than Nakamura's. Thus, the assertion that there is a motivation to combine the references, because Nakamura's image read-out process is allegedly faster than Kohda's process, is not supported by the references. Instead, the assertion appears to be unsupported speculation.

Moreover, Kohda seeks to reduce light diffusion of the stimulating light through a phosphor sheet. The use of a surface light source would lead to more diffusion of light across multiple pixel areas rather than less. Therefore, Kohda would not be appropriately modified in the way that the Examiner suggests.

Thus, for reasons analogous to those presented above for claims 60, 126, 149, and 151, Applicants submit that claims 66, 132, 150, and 152 are allowable over the prior art.

Rejection of claims 133-144 over Kohda in view of Saotome, Nakamura, Takahashi, Fukai, and Watanabe.

Applicants submit that claims 133-144 are allowable over the prior art, for at least the same reasons presented above in relation to claims 60, 66, 126, 132, and 149-152.

Rejection of claims 145-148 over Kohda in view of Saotome, Nakamura, Takahashi, and Schrof.

Applicants submit that claims 145-148 are allowable over the prior art, for at least the same reasons presented above in relation to claims 60, 66, 126, 132, and 149-152.

Additionally, there is no suggestion or motivation to combine Schrof with the other applied references. Schrof relates to a method and apparatus for determining diffusion parameters, concentration, size or flow behavior of particles in a sample, and exciting light of a light source being directed into the sample. The Examiner asserts that the motivation to combine Schrof with the other applied references would be to simplify the optics by reducing the number of optical components used, but the Examiner has not explained how Schrof would reduce the number of optical components in the Kohda, Saotome, Nakamura, Takahashi combination. Whether or not this would be the case is not readily apparent. Thus, Applicants submit that the rejection is not supported, and thus improper.

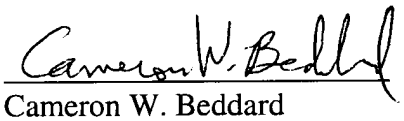
Furthermore, Schrof does not disclose the use of a stimulable phosphor sheet on which a radiation image has been stored. Instead, Schrof relates to determining diffusion parameters of particles in a sample 20. See FIGS. 1A and 1B. Although Schrof discloses the use of excitation light from a laser 11, Schrof uses the laser light to determine particle diffusion parameters. Such a determination is quite different from causing a stimulable phosphor sheet to emit light in proportion to an amount of energy stored on the stimulable phosphor sheet during its exposure to radiation. Due to this important difference, one of ordinary skill in the art would not have been motivated to combine Schrof with the other applied references. Thus, claims 145-148 are allowable for this additional reason.

Claims 153-160 are added to further define the organic EL device. Support for these claims can be found on page 247, lines 13-15 and 21-23 of the present specification. Claims 153-160 are believed to be allowable at least because of their dependence from claims 60, 66, 126, and 132, respectively.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

148. (Amended) The apparatus of claim 132, further comprising a mirror disposed to direct light from the [line] surface light source to a surface of the stimulable phosphor sheet, said mirror transmitting light emitted from the stimulable phosphor sheet, said mirror causing at least partial optical path overlap of the emitted light and light from the light source.

Claims 153-160 are added as new claims.